interrelationship. When confronted with a utility's constitutional challenge to the obligation to extend its network, the Court announced a rule that coincides precisely with the test that economists decades later would articulate for defining the existence of subsidized prices.

124. In 1917 the Court decided *New York* ex rel. *New York & Queens Gas Co.* v. *McCall*, a case in which the New York Public Service Commission ordered a gas utility having an exclusive franchise to extend its gas mains and service pipes to the community of Douglaston, "located about a mile and a half beyond the then terminus of the company's gas mains, but within the Third Ward of the Borough of Queens."[84] From the Court's description, Douglaston would have been a desirable market to serve—affluent and rapidly growing.[85] The utility's reluctance to extend service stemmed from the fact that "the mains of the company, which extended to the point nearest to Douglaston, were being used to almost their full capacity, and for this reason the estimated cost of making the improvement included new mains of some eight miles in length."[86] The utility estimated that its return on investment for the extension would be only 2¼ percent, which (although not expressly stated in the opinion) was presumably below the cost of capital. Although the utility attacked the order as a deprivation of due process, it did not claim "that the comparatively small loss . . . would render its business as a whole unprofitable" and it did not explicitly allege a taking of property.[87] The Court rejected the utility's due process argument and affirmed the order to extend the line:

> Corporations which devote their property to a public use may not pick and choose, serving only the portions of the territory covered by their franchises which it is presently profitable for them to serve and restricting the development of the remaining portions by leaving their inhabitants in discomfort without the service which they alone can render. To correct this disposition to serve where it is profitable and to neglect where it is not, is one of the important purposes for which these administrative commissions, with large powers, were called into existence . . . .[88]

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[84] 245 U.S. 345, 346 (1917).

[85] *Id.* at 349.

[86] *Id.* at 349–50.

[87] *Id.* at 351.

[88] *Id.*

McCall thus establishes the following rule: If a public utility having a uniform rate structure and a franchise protected by entry regulation is meeting or exceeding its revenue requirement, then it cannot refuse a request to extend its network to serve a new customer below incremental cost.

125. That proposition can be restated in a manner more familiar to contemporary economic analysis of network industries. A utility would not voluntarily extend its network to a given customer i if doing so would generate an incremental loss for the utility—that is, if

$$R_i < IC_i ,$$

where R_i is the utility's revenue from customer i, and IC_i is the utility's incremental cost of serving customer i. Under the regulatory contract, however, the utility can be excused from its duty to extend service even at a loss if and only if the utility as a whole is unprofitable—that is, if its total revenues TR are less than its total costs TC:

$$TR \equiv \sum_{j=1}^{n} R_j < TC.$$

It follows that, if the utility is precisely meeting a break-even constraint on its overall operations,

$$TR \equiv \sum_{j=1}^{n} R_j = TC,$$

as is the stylized objective of rate-of-return regulation. If the utility is required by the *McCall* rule to extend service unprofitably to customer i, then there must be at least one other customer k from whom the utility earns revenues exceeding incremental costs:

$$R_k > IC_k.$$

Economies of scope imply that the sum of incremental cost across the services that the company provides is less than total costs. The sum of incremental costs can equal total cost if the services are independent. Note that in the absence of economies of scope, it is inefficient to operate the services jointly. Even if each service covers its incremental cost, therefore, one or more services must cover joint and common costs as well. If, in addition, a service does not cover all of its incremental costs, then other services must also carry those incremental costs.

126. The *McCall* rule thus guarantees the existence of a cross-subsidy in the utility's rate structure. A regulated firm's rate structure is said to be free of cross-subsidies if and only if all its prices satisfy the *incremental cost test*.[89] Applying the incremental cost test, revenues generated by each service cover the incremental cost of providing that service. (The incremental cost test is defined here for only two services. In the case of more than two services, the revenues generated by each group of services must cover the incremental cost of providing that group of services.) The rationale for the incremental cost test is the requirement that each service must generate revenues that at least cover the additional cost of producing that service. If not, the other service is providing a cross-subsidy, and the customers of the other service would be better off receiving their service independently, at its stand-alone cost.

127. If a firm is regulated, it is desirable to design a rate structure that is free of cross-subsidies. Otherwise, the economic incentives can lead to allocative inefficiency. Customers receiving the

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[89] *See* WILLIAM J. BAUMOL & J. GREGORY SIDAK, TOWARD COMPETITION IN LOCAL TELEPHONY 57, 81-83 (MIT Press & AEI Press 1994). Alternatively, a break-even regulated rate structure is said to be free of cross-subsidies if and only if the prices satisfy the *stand-alone cost test*. *See, e.g., id.* at 81. Stand-alone cost refers to the firm's long-run total cost of each service operated separately. The stand-alone cost test requires that the revenues generated from either of two services not exceed the stand-alone cost of providing that service. If the revenues from one service do exceed its stand-alone cost, then that service is providing a cross-subsidy to the other service. (The definition of the stand-alone cost test is given in terms of two services. In the case of more than two services, the test requires that no group of services subsidizes any other group of services.) The test for cross-subsidization demonstrates that the customers of the service providing the cross-subsidy would be better off if that service could be obtained independently of the other service.

subsidy do not observe the full economic costs of their service and consequently demand an inefficiently high amount; customers providing the subsidy demand an inefficiently low amount or seek bypass alternatives that may be uneconomic under some conditions. As explained earlier, however, regulators almost invariably require the public utility to conform to a rate structure that is rife with cross-subsidies.

b. Service Quality

128. Regulators require a public utility to maintain specified levels of service quality. Quality of service is a fundamental part of the universal service requirement. Regulated utilities must maintain sufficient capacity not only to provide service to all customers who request it, but also to meet the peak demands of its customers. With variability of demand, the firm needs to carry the cost of substantial capital investment that can remain idle off peak. The effect of service quality regulation is that the type of capital equipment that the utility employs to meet its service obligations is tailored to satisfying regulatory specifications, which are often articulated in terms of engineering standards for reliability, capacity, and so on. Moreover, capacity investments are designed to meet service requirements while passing the test of prudency reviews and used-and-useful tests for cost recovery.

129. Service quality regulations have several significant implications for the recovery of stranded investment. First, it is often the case that the types of facilities that are needed to meet regulatory requirements are ill-suited to competitive markets. That fact does not in itself indicate that the regulated firm failed to invest wisely or that it embraced obsolete technology. Rather, the capacity that is best adapted for one type of market structure should not be expected to fit another type of market structure. For example, after airline deregulation, as airlines switched from direct routes to a hub-and-spoke system, they needed different airport accommodations and different types of planes. The capital equipment that a regulated monopoly needs to provide service is unlikely to match the needs of a competitive firm.

130. Second, the capital equipment needed by competitive firms is meant to satisfy customer needs rather than one-size-fits-all technological standards. Thus, compared with a firm whose capital

investment is designed to serve all in a uniform manner, entrants can target service offerings to specific customer needs and provide better service to some classes of customers.

131. Third, because the incumbent regulated firm built a system with substantial excess capacity, its cost of maintenance and operation can be expected to differ from those of entrants, who have the prerogative to ration customers. Moreover, the capital facilities of incumbents are long-lived, so that entrants can take advantage of technological change in the design of their facilities. Technological obsolescence of incumbent facilities thus need not indicate errors in the incumbent's investment strategy.

132. The local exchange telecommunications providers must maintain sufficient transmission capacity to meet periods of peak traffic loads. Moreover, "standby" capacity must be sufficient to meet the needs of customers who elect to depart or reduce their usage of the system and then return to the existing system as needed. Additionally, transmission capacity must be continually expanded and upgraded to meet growing demand for communications and new forms of usage, including, for example, data transmission and internet traffic.

133. Regulatory standards for transmission capacity generally include high levels of reliability in terms of call completion and clarity of transmission. These require investment in system capacity, equipment upgrades and maintenance.

c. The Implicit Obligation to Maintain Capacity for the Return of the "Prodigal Son"

134. The utility's obligation to maintain capacity for the return of departed customers is analogized to the parable of the prodigal son.[90] In the parable, one son asks for his inheritance, leaves his father, and squanders his legacy; the other son stays and manages his father's farm. When the prodigal son returns, impoverished, and begs to be given a job as a mere laborer, the father instead lovingly welcomes the son back into the family and holds a feast to celebrate his return, which angers

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[90] *Luke* 15:11-32; *see, e.g.*, Backup and Maintenance Rates and the Treatment of Stranded Costs, Dkt. No. 94-176, 152 P.U.R.4th 349 (Me. Pub. Utils. Comm'n 1994).

the loyal son.

135. Often a large customer will terminate service from the utility and turn either to a competing provider of service or to self-provision of the service. For example, a customer may contract with an entering carrier offering resale services or services that are provided using some combination of the incumbent's unbundled network elements and the entrant's facilities. Nonetheless, the departing customer continues to enjoy the benefits of a service that the utility provides to it: insurance that the customer will be able to rely on the utility to supply service if the customer's alternative source of supply is inadequate. The utility must maintain sufficient capacity to serve the departed customer *if it returns*.

136. Until it actually returns to the utility, however, the departed customer makes no contribution to recovery of the utility's cost of maintaining standby capacity. Needless to say, the departed customer makes no contribution to margin with which the utility can recoup losses on services provided below cost to politically preferred constituencies. The departed customer is a free rider, and the remaining customers pay the premium on the insurance that it consumes. That insurance subsidy artificially raises the price of service to remaining customers and makes alternative provision of the utility's service increasingly attractive to the utility's remaining customers, particularly large users.

137. Given the utility's obligation to serve future demand, it should be clear that available transmission capacity is used and useful in conferring a current benefit on consumers apart from their current consumption. Current consumers derive a current benefit from the ability of the utility's existing infrastructure to accommodate unexpected peaks in usage or growth in demand. Whether an investment is economically beneficial depends upon a wide variety of factors. Obviously, if current capacity is insufficient to meet demand at prevailing prices and an investment in plant yields added capacity, then the output generated by that added capacity unquestionably constitutes an economic benefit. Where capacity is not in short supply, further analysis may nonetheless reveal that some other form of current economic benefit accrues to utility customers and to the general public from capacity expansion. Those

benefits may include greater network reliability and insurance against longer-period capacity shortages resulting from unforeseeable increases in demand. In addition, the availability of capacity at any given moment reflects that technology and other factors make investment inherently "lumpy."

138. Telecommunications customers currently benefit from all of those possible consequences. Although at first glance it may appear otherwise, a benefit such as the avoidance of capacity shortages is not different in principle from direct financial benefits, such as lower operating costs. Each benefit has a savings in costs that corresponds to and appropriately measures its economic value, even if that value cannot be definitively quantified in monetary terms. For example, consumers clearly benefit if the utility has enough additional capacity to reduce the risk of network failure. Provision against risk is a tangible product that is bought and sold in a market at observable prices, as the existence of the insurance industry attests.

139. The existence of available capacity that reduces risk frees the utility, and ultimately its customers, from the need to bear the costs that would be entailed in incurring those risks. It also frees the utility's business customers from incurring the cost of business-interruption insurance against any financial damages to them arising from an outage of telecommunications services. Each of those burdens has an obvious financial cost whose magnitude can, at least in principle, generally be estimated.

d. Exit Regulation

140. One significant but neglected implication of the utility's obligation to serve is that the utility cannot exit a market segment at will. A utility must secure the regulator's authorization through an abandonment proceeding to withdraw service.[91] Unlike the utility, competitive entrants can abandon any of their facilities at will. The prohibition on abandonment is therefore clearly an incumbent burden,

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[91] CHARLES F. PHILLIPS, JR., THE REGULATION OF PUBLIC UTILITIES 570 (Public Utilities Reports, Inc. 3d ed. 1993) ("Voluntary abandonment, either partial or complete, must be approved by the regulatory commissions."); WILLIAM K. JONES, REGULATED INDUSTRIES: CASES AND MATERIALS 333–39 (Foundation Press 1976); Oliver P. Field, *The Withdrawal from Service of Public Utility Companies*, 35 YALE L.J. 169 (1925); Ford P. Hall, *Discontinuance of Service by Public Utilities*, 13 MINN. L. REV. 181, 325 (1929); Note, *The Duty of a Public Utility to Render Adequate Service: Its Scope and Enforcement*, 62 COLUM. L. REV. 312, 319–22 (1962).

one closely related to the utility's universal service obligation. Regulators should lift the prohibition on abandonment as soon as they permit competitive entry into the utility's service area. Until that time, the utility, compared with the unregulated firm, faces a barrier to exit. That barrier is substantial because, given rate averaging, the utility is inevitably required to offer some customers service at uncompensatory prices.

141. In fact, the prohibition against a public utility exiting its franchise area is symmetrical to the *McCall* rule compelling the utility to extend service: If the utility is at least breaking even, then it can be denied the freedom to terminate service that produces an incremental loss, just as it can be compelled to extend service to new customers who would produce an incremental loss.[92]

142. A representative statement of the rule appears in a 1918 decision involving a municipal railway:

> If a railway company is under a statutory or a contract duty to maintain and operate a line, it will be compelled by injunction or mandamus so to do, even though the further operation should be at a loss. It is only when there is no valid or binding obligation to continue operations that the company may, at its discretion, abandon an unprofitable line or branch. If there is a binding obligation to maintain and operate a part of a system, it is questionable whether that part or branch can ever be abandoned, unless the losses inflicted by its continued operation are such as will wreck the entire system.[93]

The Supreme Court stated in *Texas R.R. Comm'n* v. *Eastern Texas R.R.* that "if at any time it develops with reasonable certainty that future operations must be at a loss, the company may discontinue operation and get what it can out of the property by dismantling the road."[94] To require otherwise would effect a confiscation of property: "To compel it to go on at a loss, or to give up the salvage value, would be to take its property without just compensation which is a part of due process of law."[95] The prohibition on exit is thus another aspect of the regulatory contract that compels the utility to deviate from subsidy-free prices.

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[92] Fort Smith Light & Traction Co. *v.* Bourland, 267 U.S. 330 (1925); Iowa *v.* Old Colony Trust Co., 215 F. 307 (8th Cir. 1914); Crawford *v.* Duluth Street Ry., 60 F.2d 212 (7th Cir. 1932); Columbus Ry. Power & Light Co. *v.* Columbus, 253 F. 499 (S.D. Ohio 1918), *aff'd*, 249 U.S. 399 (1919); Salina *v.* Salina Street Ry., 114 Kan. 734, 220 P. 203 (1923); Northern Ill. Light & Traction Co. *v.* Commerce Comm'n, 302 Ill. 11, 134 N.E. 142 (1922).

[93] Columbus Railway Power & Light Co. *v.* Columbus, 253 F. 499, 505 (D. Ohio 1918), *aff'd*, 249 U.S. 399 (1919).

[94] 264 U.S. 79, 85 (1924).

[95] *Id*

143. The question of abandonment and the utility's right to withdraw service provides a valuable perspective on the regulatory contract concerning the question of whether that contract is enforceable against the utility. The contractual or statutory limits on abandonment resemble a specific performance requirement for the utility. When a party to private contract commits a breach, a court will disfavor specific performance and will order it only when the service or good is unique or when the buyer could not obtain a similar contract in the market.[96] The idea that the municipality or regulatory commission cannot obtain a similar contract in the market motivates the prerogative that the commission enjoys at common law, a prerogative resembling the remedy of specific performance, to demand that the utility discharge its obligation to serve by not abandoning routes or lines serving an incrementally unprofitable group of customers. With the arrival of competition, however, the motivation for restrictions on abandonment would seem to vanish, for the regulator then can rely on the market to obtain services for those customers whom the utility would abandon. That rationale can be found in the existing cases. Courts have considered the availability of adequate substitute service relevant to whether the regulated firm may be allowed to abandon service on a line or to a group of customers that is incrementally unprofitable.[97] When such substitutes are available, courts have even allowed the regulated firm that is profitable as a whole to exit an incrementally unprofitable segment of the market.[98]

V. REMEDIES FOR BREACH OF THE REGULATORY CONTRACT

144. Contract remedies provide guidance on the measurement of stranded costs and the proper economic approach to determining compensation for those costs. Given that the utility's costs were incurred under the regulatory contract, the opening of the utility's market to competition—that is, the

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[96] *See, e.g.*, Anthony T. Kronman, *Specific Performance*, 45 U. CHI. L. REV. 351 (1978).

[97] Mississippi R.R. Comm'n *v.* Mobile & O.R.R. Co., 244 U.S. 388 (1917); State *ex rel.* Kirkwood *v.* Public Serv. Comm'n, 330 Mo. 507, 50 S.W.2d 114 (1932).

[98] Cincinnati N. R.R. *v.* Public Utils. Comm'n, 119 Ohio St. 568, 165 N.E. 38 (1929) (railroad passengers adequately served by bus); Union Pac. R.R. *v.* Public Serv. Comm'n, 102 Utah 465, 132 P.2d 128 (1942) (same).

termination of entry regulation intended to ensure that the utility receives the opportunity to recover nonsalvageable investments that it made in reliance on its franchise—is a breach of a material term of that contract if not accompanied by an offsetting removal of incumbent burdens. Unilateral opening of the market to competition is opportunistic behavior by the promisor—namely, the regulator.

145. In private contracts, damage remedies for breach guard against opportunistic behavior. The standard remedy for breach of contract is to award the promisee its *expectation interest*.[99] The proper remedy for breach of the regulatory contract is therefore to give the utility the expected level of profit that it would have received had there not been a breach of the regulatory contract. The contract price under the regulatory contract equals the sum of the utility's revenue requirements over the years that the regulatory contract was expected to remain in force. As noted previously, the revenue requirement equals the utility's operating cost (plus depreciation), plus its allowed rate of return multiplied by its rate base. The utility's variable cost equals its operating cost plus depreciation.

1. The Utility's Right to Expectation Damages for the Regulator's Breach of the Regulatory Contract

146. The expectation damage remedy for breach of the regulatory contract can be calculated based on principles of contract law. It is useful to specify the method of determining those damages in the context of regulation.

147. Consider the simplest case of a two-period investment problem. In the initial period, the utility makes an irreversible investment of I dollars in plant and equipment. The utility expects to earn revenues R^e and to incur operating costs C^e in the second period. The utility discounts its earnings at rate i, which represents the opportunity cost of capital in an investment of comparable risk. The expected profit of the utility is therefore equal to discounted expected revenues net of operating costs minus capital investment:

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[99] E. Allan Farnsworth, *Legal Remedies for Breach of Contract*, 70 COLUM. L. REV. 1145 (1970); Lon Fuller & William Perdue, *The Reliance Interest in Contract Damages*, 46 YALE L.J. 52 (1936); *see also* DAN B. DOBBS, REMEDIES: DAMAGES, EQUITY, RESTITUTION 786-88 (West Publishing Co. 1973).

$$\textit{Expected profit} = \frac{R^e - C^e}{1+i} - I.$$

The profit is also referred to as *economic rent*. The net revenues $R - C$ are referred to as *quasi-rent*.

148. Economic rent provides an incentive for a firm to enter the market. That means that the contract must be such that expected profit is greater than or equal to zero. The utility would not make an investment unless the present discounted value of net revenues exceeds investment cost.

149. Economic quasi-rent provides an incentive for a firm not to exit the market. Once the firm has sunk its irreversible investment I, the firm in this simple two-period model no longer considers the investment in its decision making. It decides whether or not to produce depending on whether expected revenues cover expected costs, $R^e \geq C^e$. That is precisely the temptation for the other party to the contract to behave opportunistically. The regulator has an incentive at that point, after the investment has been made, to seek to lower revenue payments to the level of expected operating costs. The utility would continue to operate even if revenues were lowered all the way to the level of expected operating costs. Thus, regulatory opportunism is an attempt to capture the utility's quasi-rent.

150. Suppose that the regulator breaches the contract after the utility has made the irreversible investment in plant and equipment. If the utility does not operate, it does not receive revenues R, but it also does not incur operating cost C. Thus, expectation damages for breach of contract equal the net revenues foregone:

$$\textit{Expectation damage payment} = R^e - C^e.$$

Thus, expectation damages equal the firm's expected net earnings and correspond exactly to the firm's quasi-rent. If the expectation damage payment is made, then the utility earns the profit that it would have made had the contract been honored. Moreover, the regulator is not tempted to breach the contract simply to capture the quasi-rent, because that would be the precise amount of the damage payment.

151. If the damages are to be paid in the preceding period, it is necessary to discount damages. The appropriate discount rate should reflect the utility's cost of capital, which depends on the riskiness of regulated returns. Then, the present value of the expectation damage payment is $(R^e - C^e)/(1 + i)$. Typically, the assets of regulated utilities have long lifetimes. Thus, expectation damages in the initial period should equal the expected present discounted value (*PDV*) of cash flow over the time horizon T that the utility expected to earn revenues from the regulated assets:

$$PDV = \sum_{t=0}^{T} \frac{R_t^e - C_t^e}{(1+i)^t}.$$

In the *PDV* calculation, the terms R_t^e and C_t^e denote expected revenues and operating costs in period t, and i is the discount rate.

2. Competition and Mitigation of Damages

152. Principles of mitigation of damages apply equally to the regulatory contract. If the utility's productive assets are removed from service as a result of competitive rules and continuing regulation, then its stranded cost is a loss to society. As in the case of any loss of resources, steps to mitigate the loss should be taken by parties in a position to do so.[100] The common law is replete with instances where a party legally entitled to compensation for a harm it has suffered nonetheless is obliged to mitigate that harm if possible.[101] Not surprisingly, state PUCs have addressed the recovery of "nonmitigable" stranded costs.

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[100] *See* WILLIAM J. BAUMOL & J. GREGORY SIDAK, TRANSMISSION PRICING AND STRANDED COSTS IN THE ELECTRIC POWER INDUSTRY 111-13 (AEI Press 1995).

[101] *E.g.*, Sauer v. McClintic-Marshall Construction Co., 179 Mich. 618, 146 N.W. 422 (1914); RESTATEMENT (SECOND) OF CONTRACTS § 350 comment b.

a. The Utility's Duty to Mitigate and the Regulator's Duty Not to Impede Mitigation

153. Though it is clear that the utility's duty to mitigate stranded costs serves the interest of consumers, it is also clear on closer inspection that mitigation serves the utility's best interest as well. That is so because the utility's large business customers do not have service contracts that terminate simultaneously. As customers with early expiration dates depart, they leave the as-yet-unrecovered portion of stranded costs to be borne by a dwindling number of remaining customers. But the overwhelming number of those remaining (commercial and industrial) customers can be presumed to operate in competitive markets for their own goods and services. A firm in a competitive market that is made to pay a higher price than its rivals for an essential input such as telecommunications will suffer losses and, in the extreme case, eventually cease operations. Companies that cease operations do not purchase from the utility, even if they remained contractually obligated to do so.

154. Knowing that it cannot bankrupt or financially jeopardize its remaining customers in that manner, the utility has a strong incentive to find new customers for its excess capacity. The obligation illustrates that the economic interests of the utility and consumers are indeed often entirely compatible, despite appearances to the contrary.

155. Those losses are offset by revenues that the utility will earn in the marketplace *using those same facilities*. As in the preceding example, the expectations damages that would restore the utility to the position that it would have occupied had the regulatory contract not been breached equal the utility's revenue requirement net of competitive market revenues. *Therefore, the proper economic measure of stranded costs equals the difference between (1) the utility's net revenue requirement under regulation and entry regulation and (2) the net revenues earned by the utility from those stranded facilities in the competitive market.*

156. It is important not to deduct all of the utility's potential earnings in the competitive market, for they may include earnings from newly expanded facilities that would have been obtained even

if the regulatory contract had continued in force. Only those revenues earned from facilities that were released by the termination of the regulatory contract should be used to offset the losses.

157. Some harms are nonmitigable. "Regulatory assets," such as deferred rate increases, generally have no market value because they are no more than accounting conventions. Common sense and economic efficiency dictate that the regulator not perpetuate policies that continue to increase the magnitude of such regulatory assets at the same time that the regulator is contemplating remedies for breach of the regulatory contract. Even if the regulator takes steps on its own to mitigate the stranding of regulatory assets, it will still be difficult for the utility to mitigate damages resulting from its inability to recover the cost of facilities that deregulation has made obsolete. It may be the case that *no* form of mitigation is available to the utility other than to do what competition would require—namely, to retire facilities whose revenues fail to cover operating costs.

158. The regulator has a duty not to interfere with the utility's efforts to mitigate stranded costs. Mitigation requires the utility to make the best use of capital facilities created under regulation. It is therefore essential that the regulator not restrict the incumbent utility's pricing and product offerings in the new competitive environment. The regulator's imposition or continuation of pricing restrictions and quarantines can only increase the magnitude of the utility's nonmitigable stranded costs, which ultimately will harm consumers.

b. The Measurement of the Utility's Expectation Damages Net of Mitigation

159. Expectation damages emphasize the public utility's forgone earnings as a consequence of the regulator's breach of the regulatory contract. One should therefore compute the value of stranded assets by calculating the utility's expected net revenue stream under regulation and subtracting the utility's expected net revenue stream under competition.

160. The regulator breaches the regulatory contract by opening the market to competition without resolving issues of stranded costs and incumbent burdens. The utility is likely to continue

operating. It may experience lower revenues, but its costs may change as well. Let R_1 and C_1 denote expected revenues and costs under regulation, and let R_2 and C_2 denote expected revenues and costs under competition. Then, the fundamental measure of the change in the firm's net expected earnings is defined as:

$$\Delta \equiv (R_1^e - C_1^e) - (R_2^e - C_2^e).$$

The expectation damages for a given period equal the difference between the contract price net of regulated costs and the market price net of competitive market costs:

$$\textit{Expectation damages} = \Delta.$$

The net revenues in the competitive market, $R_2^e - C_2^e$, are the *mitigation* of contract damages. If the utility earns this amount and receives the damages payment, that is sufficient to restore the seller's expected profit. The expectation damage payment assumes that the payment is made at the time that the net revenues would have been incurred.

161. Measurement of expectation damages is further complicated because the assets of the deregulated utility have long lives. Let PDV_1 denote the present discounted value of expected net revenues under regulation as previously defined. Similarly, define PDV_2 as the present discounted value of expected net revenues earned by the firm under competition. The economically correct measure of damages net of mitigation is to take the difference, Δ^*, between the present discounted values of the two cash flows:

$$\textit{Expectation damages} = \Delta^* \equiv PDV_1 - PDV_2.$$

When there is only a single period, that expression coincides with the single-period expectation damage measure. When there is more than one period, the calculation of damages encounters at least two difficulties. First, the time horizons for the two *PDV* calculations can easily differ. For example, the assets may be retired from service much sooner in the competitive case than they would be in a regulated industry. So there are two distinct time horizons, T_1 under regulation and T_2 under competition. Second, the discount rates will most likely differ in the two *PDV* calculations. For example, increased risk in the competitive market will require a higher rate of discount in the competitive *PDV*. Therefore, there are two discount rates, i_1 under regulation and i_2 under competition. Because the competitive firm expects to earn PDV_2 under competition, it follows that the expectation damage payment (possibly with different time horizons and discount rates for the two *PDV* calculations) restores the expectation of the firm to its initial expectation, which is PDV_1.

3. The Superiority of the Net-Revenue Approach to Measuring Damages for Breach

162. The expectation damages approach emphasizes the utility's net revenues. That approach contrasts with the utility's *reliance interest*, which equals the irreversible, transaction-specific investment that the utility made in reliance on the continuation of the regulatory contract. That amount is equal to the rate base, which is the book value of the investment in facilities, net of depreciation. Because of the regulated revenue requirement, expectation damages and reliance damages coincide *if* reliance damages include the utility's rate base net of depreciation, plus additional liabilities that the utility expected would be included in the rate base. The two damage measures do *not* coincide with a narrow interpretation of stranded investment that does not take into account the full set of costs.

a. Incentives for Efficient Breach

163. The expectation damages approach has a distinct advantage over remedies that are based on an assessment of the utility's capital expenditures. Most significantly, expectation damages provide the correct incentives for regulators to honor the regulatory contract when it is efficient to do so, thus deterring regulatory opportunism. Moreover, expectation damages provide incentives for efficient breach. If the benefits of competition exceed the benefits of regulation, then the expectation damage remedy will send the correct signal.

164. If competition lowers operating costs, then it is worthwhile to shift from regulation to competition. That is, competition is desirable if $C_1 > C_2$. Note that the damage payment is positive only

if revenues payments fall under competition as well. Breach of the regulatory contract is called for if and only if the payment to the firm under regulation exceeds the payment to the firm under competition plus the payment for breach of contract:

$$R_1 > R_2 + [(R_1 - C_1) - (R_2 - C_2)].$$

By cancelling the revenue terms on both sides of the equation, we obtain again the cost inequality $C_1 > C_2$. This establishes that, with the expectation damages remedy, the regulator will breach the regulatory contract if and only if competition lowers operating costs.

165. That insight addresses the common complaint that the benefits of competition will not be achieved if a damage remedy must be paid to the incumbent utility before moving to competition. On the contrary, the benefits of competition stem from operating efficiencies and the corresponding lowering of revenue payments. Paying damages to compensate the incumbent utility still leaves benefits for consumers. The benefits derive from lower costs, not income transfers from investors to consumers.

b. Transactional Efficiency

166. There are other benefits from a revenue-based approach, not the least of which is avoidance of reopening past regulatory hearings. Under the established regulatory process, regulators and intervenors carefully scrutinized the utility's investments before they were made. Those investments included in the rate base were judged to have been prudently incurred. The only investments stranded by competition are those in the rate base. Some persons, opposed to allowing a public utility the opportunity to recover stranded costs, characterize those costs as imprudent investments in inefficient and uncompetitive facilities. That characterization ignores that the public utility commission considered those facilities to be efficient when it approved them. Moreover, those facilities were designed on the basis of expectations of technology, capacity utilization, and customer requirements *at the time that those assets*

were installed. For regulators to reevaluate those decisions on the basis of current market conditions is entirely appropriate for current planning purposes, but it is entirely *inappropriate* as a review of past choices using 20-20 hindsight.

167. The utility's loss from the regulator's breach of the regulatory contract equals the contract payments net of operating costs for the time period that the regulatory contract was expected to remain in force. In any single year, the utility's stranded investment equals the utility's rate base times its allowed rate of return. The loss therefore includes the book value of capital facilities and the capitalized value of "regulatory assets" that the regulator has permitted or directed the utility to include in its rate base.

168. The expectation damages approach emphasizes that contracts do not protect investment per se; rather they serve to protect *expected gains from trade*. It is therefore not necessary to itemize and reevaluate every component of stranded investment and other costs to assess the value of stranded investment unless such a procedure is performed in the context of estimating the regulated revenue requirement. By emphasizing the revenue requirement, the expectation damages approach also makes it clear how to compare regulated earnings with the relevant portion of the utility's earning after deregulation, without the need to designate specific assets as competitive or stranded.

169. The net-revenue approach clearly shows that there are benefits from the removal of some of the utility's obligations to serve and other incumbent burdens. Doing so will raise net revenues for the incumbent utility and hence lower required compensation. The award of expectations damages for stranded costs implies that the removal of incumbent burdens by the public utility commission or state legislature will lower the incumbent utility's stranded costs.

E. Mistake and Impossibility

170. When, in private contracts, an unforeseen event makes the performance of a contract substantially more costly for one of the parties than at the time the parties entered into their agreement, the party facing that higher cost of performance understandably can be expected to argue that he should be excused from performing the contract because it is impossible to do so.[102] Similarly, one party in those circumstances may seek to be excused from performance on the grounds that no contract in fact exists because of the (presumably mutual) mistake of the promisor and promisee. Regulators may similarly claim mistake or impossibility as a defense to efforts by the utility to enforce the regulatory contract. It was a mutual mistake of fact, the state would assert, not to foresee that a competitive market structure could arise in the relevant network industry. Similarly, the advent of a competitive market, the state would argue, makes it impossible for it to ensure that the utility will receive the opportunity to recover its invested capital and earn a competitive rate of return on it.

171. Before one examines the plausibility of such arguments, its bears emphasis that by their very nature such defenses raised by the regulator reinforce the conclusion that the utility and the state entered into a contract. The thrust of those defenses is that the formation of the regulatory contract was faulty because of mutual mistake, or that forces beyond its control prevent the regulator's performance of that contract at a cost that the parties would have considered reasonable ex ante. In either case, the regulator's defense forecloses the argument that it never had a contractual relationship with the utility. Furthermore, whenever a party invokes the defense of impossibility or mistake, the natural question to ask is whether the parties already contracted, implicitly if not explicitly, for the risk in question to be borne by the party now seeking to have the contract declared void. In the case of a utility, that question is especially compelling, for a critical objective of the regulatory contract is to reduce the volatility surrounding the allowed rate of return so that the utility can efficiently use debt to fund its investments

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[102] *See* Richard A. Posner & Andrew M. Rosenfield, *Impossibility and Related Doctrines in Contract Law: An Economic Analysis*, 6 J. LEGAL STUD. 83 (1977).

in transaction-specific, long-lived investments in infrastructure.

172. When, because of mistake or impossibility, a contract is rescinded or deemed never to have been formed in the first place, the court orders the parties to make restitution of the benefits conferred upon one another.[103] That remedy is intended to prevent the parties from being unjustly enriched at the expense of the other or unjustly penalized. The parties are to be restored to the position that they would have occupied had the contract not been signed. That exercise presents difficulties, for there are costs incurred from the transaction—namely, the investment of the utility, which cannot be reversed.

173. For the utility, restitution of the benefits that it conferred upon the state (for consumers, as third-party beneficiaries) suggests a damage remedy similar to recovery of reliance expenditures. Because the utility is subject to cost-of-service regulation, the utility's expected revenues were meant to recover the economic costs of providing service. Thus, the utility was expected to be allowed the opportunity to recover the cost of its investment and a competitive rate of return. To the extent that the utility did not recover some portion of its costs under the agreement, it should be allowed to recover the remaining amount from consumers.

174. A court should offset such recovery by deducting any benefits that the utility received up until the moment of rescission. That offset would include the maximum of the scrap value of the capital investment or the returns that could be obtained from continued operation of the facilities to provide service in the competitive market. By deducting the returns from continued use of the facilities, the utility would not benefit from the continued services of facilities, from continued use of public rights of way (presumably at incremental cost), or from facilities constructed using eminent domain. The past benefits of a protected franchise need not be reimbursed because regulation already constrained the utility's revenues. In mandating unbundled network access, the regulator has already taken the benefit of a

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[103] RESTATEMENT OF CONTRACTS § 468 (1932); RESTATEMENT OF RESTITUTION § 150 (1939); DOBBS, *supra* note 99, at 266, 722, 741, 974.

protected franchise away from the incumbent utility.

175. Up until the moment of rescission, what benefits have consumers received from the utility? During each preceding year that a regulatory contract was thought to be in effect, consumers compensated the utility under cost-of-service regulation for the value of service delivered. The services consumed cannot be returned, and reasonable payment has already been made. Thus, the remaining compensation that need be made by consumers in this case is the utility's rate base plus a fair rate of return to capital investment. The depreciation schedule required by the regulator meant that consumers received service at a price that paid for recovery of a lesser amount of the utility's invested capital than was realistic in light of the economic obsolescence of assets precipitated by changes in regulation. Similarly, consumers received the benefits of all the incumbent burdens, discussed at length earlier, that were borne by the utility between the outset of the contract and the time of its being set aside.

F. Promissory Estoppel

176. The relationship between the utility and the regulator is a contract. For sake of argument, however, assume the counterfactual: that no contract can be found to exist between the utility and its regulator. Still, the utility would be entitled to recover damages from the state at least in the amount of the utility's costs incurred in detrimental reliance on representations made to it by the regulator.

177. The doctrine of promissory estoppel entitles a promisee to recover damages even though no contract existed between him and the promisor, usually for lack of consideration flowing from the promisee to the promisor. The Restatement (Second) of Contract provides: "A promise which the promisor should reasonably expect to induce action or forbearance on the part of the promisee or a third person and which does induce such action or forbearance is binding if injustice can be avoided only by enforcement of the promise."[104] At a minimum, the damages that the promisee may recover under promissory estoppel are reliance damages. Moreover, legal scholars note that, as such cases have

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[104] RESTATEMENT (SECOND) OF CONTRACTS § 90(a) (1979); *see generally* Jay M. Feinman, *Promissory Estoppel and Judicial Method*, 97 HARV. L. REV. 678 (1984).

increasingly involved business relationships rather than the traditional classroom hypothetical of the rich uncle who promises to pay his nephew's college tuition, courts have become more inclined to protect the promisee's expectation interest, presumably on the reasoning that "in business cases, expectation recovery may better reflect opportunity losses than would reliance recovery."[105] Thus, a number of courts have awarded the promisee lost profits under a promissory estoppel theory.[106]

178. The natural question that arises when promissory estoppel is applied to the relationship between the regulator and the utility is whether the regulator has indeed made a promise. Under traditional contract principles, the answer is yes. The Restatement (Second) of Contracts defines a promise as "a manifestation of intention to act or refrain from acting in a specified way, so made as to justify a promisee in understanding that a commitment has been made."[107] Compare that definition with the notice of proposed rulemaking, and its subsequent report and order, that typify the actions of a regulatory body with jurisdiction over telecommunications utilities. Those documents routinely are dozens of pages long and reflect hundreds of pages of comments of interested parties to whom the regulator is required, by administrative procedure statutes, to give notice of proposed changes in regulation. And, although a regulatory agency is free to repudiate an earlier policy upon which private parties may have relied, it must give a reasoned explanation when doing so.[108] In the specific case of long-lived investments made by utilities, the regulator's "manifestation of intention to act or refrain from acting in a specified way" is even more inescapable, for the regulator convened proceedings to review specific proposed capacity additions and rate-base inclusions of investments in facilities, which often were hotly contested by interested parties. What else could such proceedings purport to do if not "justify a promisee in understanding that a commitment has been made"? As one scholar has noted:

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[105] Feinman, *supra* note 104, at 688; *id.* at 691 n.59 ("promissory estoppel cases now arise chiefly in commercial contexts").

[106] Walters *v.* Marathon Oil Co., 642 F.2d 1098 (7th Cir. 1981); Universal Computer Sys. *v.* Medical Servs. Ass'n, 628 F.2d 820 (3d Cir. 1980); Arnold's Hofbrau, Inc. *v.* George Hyman Constr. Co., 480 F.2d 1145 (D.C. Cir. 1973); Walker *v.* KFC Corp., 515 F. Supp. 612 (S.D. Cal. 1981).

[107] RESTATEMENT (SECOND) OF CONTRACTS § 2 (1979).

[108] *Cf.* Motor Vehicle Mfrs. Ass'n of the U.S., Inc. *v.* State Farm Mutual Automobile Ins. Co., 463 U.S. 29 (1983).

> The standard, consistent with the definition in section 90, is not whether the promisor clearly made a promise, but whether, given the context in which the statement at issue was made, the promisor should reasonably have expected that the promisee would infer a promise. This standard may be met not only by a particular promise or representation, but also by general statements of policy or practice . . . .[109]

In short, even if one disputes that a "contract" exists between the utility and its regulator, the commitments made by the regulator to the utility constitute a promise upon which the utility could be expected to rely. Thus, the promise gives rise to a remedy of at least reliance damages, if not expectation damages.

VI. DEREGULATORY TAKINGS

179. Even if one refuses to recognize that the regulatory contract is enforceable as a matter of contract law against the regulator in the event of its breach, the abnegation of that relationship between the regulator and the utility (whatever legal name one chooses to attach to it) effects a taking of private property for public use—namely, the promotion of competition in a regulated industry—without just compensation. We call that form of confiscation of private property a *deregulatory taking*.

180. Sweeping deregulation promises to bring the benefits of competition to telecommunications markets. Those benefits include improvements in operating efficiencies, competitive prices, efficient investment decisions, technological innovation, and product variety. The benefits of competition, however, do not include forced transfers of income from shareholders of utilities to their customers and competitors as a result of asymmetries in regulation. Asymmetric regulation can only serve to impede competition and impair the financial health of incumbent utilities. As regulators dismantle barriers to entry and other regulatory restrictions, they must honor their past commitments and avoid actions that threaten to confiscate or destroy the property of utility investors on an unprecedented scale.

181. The Supreme Court has placed takings cases into three categories. In declining order of judicial solicitude given the property owner, the categories are physical invasions of property;

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[109] Feinman, *supra* note 104, at 691.

confiscatory public utility rates; and regulatory takings. Breach of the regulatory contract does not fit automatically into any one of those categories because, being unprecedented, it necessarily is a case of first impression under the Takings Clause. That is true even with respect to the precedents addressing public utility regulation. Ultimately, first principles of legal and economic theory will determine a deregulatory taking as an event necessitating the state's payment of just compensation. Close examination of the Court's reasoning supports the conclusion that, under all three branches of existing takings jurisprudence, the regulator's abrogation of the regulatory contract would be a compensable confiscation of the property of the regulated firm. That result holds whether one casts a deregulatory taking as a physical invasion of property, as a confiscatory setting of public utility rates, or as a noninvasive regulatory taking. The appropriate measure of damages for a deregulatory taking is the utility's expectation of its forgone net benefit *if the state were to abide by the regulatory contract.* As a matter of economic theory, that amount cannot be less than the opportunity cost of the utility's property under the state's continued adherence to the regulatory contract.

A. Regulatory Takings and the Destruction of the Investment-Backed Expectations of the Incumbent Utility

182. The least-protected class of government confiscation of property, regulatory takings have produced an analytical model in the Supreme Court that is only occasionally hospitable to the plight of land owners subjected to land use or environmental restrictions. Nonetheless, the straightforward application of that same model to the state's repudiation of the regulatory contract produces, even at this lowest level of judicial solicitude, powerful protection for the property of the incumbent utility.

1. Legal Criteria Concerning Regulatory Takings

183. The law of regulatory takings has descended from Justice Holmes's "general rule" announced in *Pennsylvania Coal Co.* v. *Mahon* in 1922, a rule most notable for its utter lack of guidance: "while property may be regulated to a certain extent, if regulation goes too far it will be recognized as

a taking."[110] For half a century the Court gave little guidance as to what "too far" meant. In 1978 Justice Brennan, writing for the Court in *Penn Central Transportation Co.* v. *New York City*, finally attempted to provide such guidance: A regulation constitutes a taking if it denies the property owner "economically viable use" of that property, which is to be determined by examining the following three factors: (1) the "character of the governmental action," (2) the "economic impact of the regulation on the claimant," and (3) the "extent to which the regulation has interfered with distinct investment-backed expectations."[111] The Court has reiterated that three-part test in subsequent decisions.[112] That test is even more likely to indicate a need for compensation in the case of breach of the regulatory contract than in the case of burdensome land-use restrictions, which spawned the rule.

a. The Character of Governmental Action

184. In an opinion for the Federal Circuit in *Loveladies Harbor, Inc.* v. *United States*, Judge Jay Plager described this first of the three *Penn Central* criteria as requiring a court to scrutinize "the purpose and importance of the public interest reflected in the regulatory imposition" and "to balance the liberty interest of the private property owner against the Government's need to protect the public interest through imposition of the restraint."[113] That analysis sounds identical to the means-ends scrutiny of economic regulation that courts employ under the Due Process Clauses of the Fifth and Fourteenth Amendments. Implicitly, that means-end analysis takes place at the level of minimum-rationality review. As Judge Plager noted, the Court has considered whether "the avowed need of the Government" to protect some "interest of the public" is indeed "a legitimate interest"[114] and whether "the method of attaining the sought-after goal was reasonably designed to attain it."[115]

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[110] 260 U.S. 393, 415 (1922).

[111] 438 U.S. 104, 124 (1978) (citation omitted); *accord*, *Lucas*, 112 S. Ct. at 2893; Loretto *v.* Teleprompter Manhattan CATV Corp., 458 U.S. 419, 426 (1982).

[112] *E.g.*, Kaiser Aetna *v.* United States, 444 U.S. 164, 175 (1979); PruneYard Shopping Center *v.* Robins, 447 U.S. 74, 83 (1980).

[113] 28 F.3d 1171, 1176 (Fed. Cir. 1994).

[114] *Id.* (citing Ruckelshaus *v.* Monsanto Co., 467 U.S. 986, 1014 (1984)).

[115] *Id.* (citing Nollan *v.* California Costal Comm'n, 483 U.S. 825, 837 (1987)).